

ABSTRACT OF THE DISCLOSURE

System and methods are disclosed for passively determining the location of a moveable transmitter utilizing a pair of phase shifts at a receiver for extracting a direction
5 vector from a receiver to the transmitter. In a preferred embodiment, a phase difference between the transmitter and receiver is extracted utilizing a noncoherent demodulator in the receiver. The receiver includes an antenna array with three antenna elements, which preferably are patch antenna elements spaced apart by one-half wavelength. Three receiver channels are preferably utilized for simultaneously processing the received signal from each
10 of the three antenna elements. Multipath transmission paths for each of the three receiver channels are indexed so that comparisons of the same multipath component are made for each of the three receiver channels. The phase difference for each received signal is determined by comparing only the magnitudes of received and stored modulation signals to determine a winning modulation symbol.

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